Application No.: 09/806,775 Docket No.: 20386-00294-US

REMARKS

Claims 22-24, 29-30, 32 and 36 are pending. Claims 1-21, 25-28, 31 and 33-35 are canceled. Claim 36 is new. Claims 22-24, 29-30 and 32 are amended.

Claim Amendments

Claims 22-24 and 29 are amended to improve clarity. Claims 22, 24 and 29-30 and 32 are amended to depend from new claim 36. New claim 36 is supported by original claim 1 and the original specification (see page 3, line 26 to page 5, line 12, for example). No new matter has been added.

Rejections - 35 U.S.C. §112

Applicants respectfully request withdrawal of the rejection of claims 22-24 and 27-35 under 35 U.S.C. §112, second paragraph, for allegedly failing to support the recitation that the two "components react with each other". Claims 27-28, 31 and 33-35 are canceled herein, thereby rendering the rejection of these claims moot. New claim 36 does not recite the rejected language, but instead states that the first and second glass components react to form first and second oxide particles which combine to form multicomponent glass particles, as suggested by the Examiner. Claims 22-24, 29-30 and 32 depend from claim 36 and therefore do not include the rejected language.

Rejections - 35 U.S.C. §102

Applicants respectfully request reconsideration and withdrawal of the rejection of claims 33-35 and 27 under 35 U.S.C. §102(b) as being anticipated by FI 98832 (Tikkanen).

Claims 33-35 and 37 are canceled herein, thereby rendering the rejection of these claims moot.

New claim 36 recites:

A method for forming multicomponent glass particles and spraying the particles to a target, the method comprising:

supplying a fuel gas through a nozzle of a spraying device to produce a flame;

introducing oxygen to the flame through the nozzle;

introducing a first glass component to the flame through the nozzle such that the first glass component reacts to form first oxide particles, wherein the first glass component is a gaseous or vaporous substance;

introducing a second glass component to a vicinity of the flame, wherein the second glass component comprises a liquid solution containing a rare earth metal;

introducing an atomizing gas to the vicinity of the flame through the nozzle;

atomizing the second glass component with the atomizing gas in the vicinity of the flame so as to form second oxide particles; and

causing the first oxide particles and the second oxide particles to combine with each other so as to form multicomponent glass particles.

The method embodied in claim 36 provides a novel process for making multicomponent glass using rare earth metals. The present application discusses issues associated with known methods of using rare earth metals to produce multicomponent glass. Erbium is provided as an example of a rare earth metal. The application explains a known process of producing multicomponent glass wherein a preform is immersed in a liquid containing erbium. The application also discloses another known process in which erbium-containing aerosols are produced using an ultrasound method. The application further discusses the drawbacks associated with these known methods. The claimed method provides an advance over prior methods by providing a small droplet size and immediate atomizing of the liquid component prior to the flame, which are important for ensuring homogeneous and non-clustered distribution of erbium atoms in the resulting glass matrix. The desired result of the claimed process is only achieved by using rare earth metals.

As shown above, claim 36 recites introducing a second glass component to a vicinity of the flame through the nozzle, wherein the second component comprises a liquid solution containing a rare earth metal. Tikkanen does not teach or suggest making multicomponent glass

particles using a liquid component containing a rare earth metal, as recited in claim 36. Therefore, claim 36 is allowable over Tikkanen.

Rejections - 35 U.S.C. §103

Applicants respectfully request reconsideration and withdrawal of the rejection of claims 28, 22 and 29-32 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,336,049 (Takahashi) in view of Tikkanen.

Claims 28 and 31 are canceled herein, and the rejection of these claims is therefore moot.

As discussed above, new claim 36 recites introducing a second glass component to a vicinity of the flame through the nozzle, wherein the second component comprises a liquid solution containing a rare earth metal. Claim 36 further recites atomizing the second glass component with the atomizing gas in the vicinity of the flame. Takahashi does not disclose the use of rare earth metals. Although Takahashi discloses using nitrates for other metal dopants, one cannot conclude that all of the nitrates are suitable for use if some of them are. Takahashi also discloses nebulizing the liquid component in a separate nebulizer by supersonic vibration or by a carrier gas supplied from a conduit. The liquid is not atomized in the vicinity of the flame as recited in claim 36. For at least these reasons, Takahashi does not teach the claimed process. Tikkanen also fails to teach the use of rare earth metals, as discussed above. Thus, the references as combined by the Examiner do not teach a method in which a liquid component containing a rare earth metal is atomized with an atomizing gas in the vicinity of a flame. Therefore, claim 36 is allowable over the combination of Takahashi and Tikkanen. Claims 22, 29 and 32 depend from claim 36 and are therefore allowable over the combination of Takahashi and Tikkanen.

Applicants respectfully request reconsideration and withdrawal of the rejection of claims 23-24 under 35 U.S.C. §103(a) as being unpatentable over Takahashi in view of Tikkanen, and further in view of U.S. Patent No. 4,923,279 (Ainslie). Claims 23-24 depend from claim 36. Takahashi and Tikkanen fail to teach the claimed process for the reasons set forth above. Ainslie teaches a method in which a preform is immersed in a liquid containing erbium. Ainslie does not

disclose atomizing a liquid component containing a rare earth metal with an atomizing gas in the vicinity of a flame, as recited in claim 36. Thus, the references as combined by the Examiner do not teach a method in which a liquid component containing a rare earth metal is atomized with an atomizing gas in the vicinity of a flame. Therefore claim 36 and dependent claims 23-24 are allowable over the asserted combination of Takahashi, Tikkanen and Ainslie.

Conclusion

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 22-0185, under Order No. 20386-00294-US from which the undersigned is authorized to draw.

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Respectfully submitted,

By _____
Brian J. Hairston
Registration No.: 46,750
CONNOLLY BOVE LODGE & HUTZ LLP
1990 M Street, N.W., Suite 800
Washington, DC 20036-3425
(202) 331-7111
(202) 293-6229 (Fax)
Attorney for Applicant